

Appl. No. 10/065,523
Reply to Final Office action of September 12, 2005

IN THE CLAIMS

1. (Previously Presented) A method for hoisting and positioning oilfield apparatus over a well head, comprising:
coupling the oilfield apparatus to a mast having at least two telescoping load bearing arms prior to extending the at least two telescoping load bearing arms, each of the at least two telescoping load bearing arms being comprised of a plurality of co-axially aligned segments;
lifting the oilfield apparatus through an action of synchronously extending the at least two telescoping arms; and
pivoting the at least two telescoping load bearing arms to position the oilfield apparatus over the wellhead.
2. (Previously Presented) The method of claim 1, wherein the at least two telescoping load bearing arms of the mast are pivotally mounted to a vehicle.
3. (Previously Presented) The method of claim 1, wherein at least one of the at least two telescoping load bearing arms includes a plurality of segments and a self-locking jack screw for extending a first one of the plurality of segments with respect to a second one of the plurality of segments.
4. (Previously Presented) The method of claim 3, wherein the at least one of the at least two telescoping load bearing arms includes a lifting chain for telescopically extending a third one of the plurality of segments out of the second one of the plurality of segments as the second of the plurality of segments is extending.
5. (Previously Presented) The method of claim 1, further comprising automatically limiting the degree to which the at least two arms may be pivoted based on an amount the at least two arms are extended.

Appl. No. 10/065,523
Reply to Final Office action of September 12, 2005

6. (Previously Presented) The method of claim 5, wherein automatically limiting the degree to which the at least two arms may be pivoted includes moving, with respect to points around which the at least two arms are pivoting, a mounting point of a mechanism causing pivoting of the at least two arms based on the amount the at least two arms are extended.

7. (Original) The method of claim 1, wherein the mast is mounted to a rear portion of a vehicle for transporting the mast to the well head.

8. (Previously Presented) A method for hoisting oilfield apparatus over a well head, comprising;

transporting the oilfield apparatus and a mast to well head on a vehicle, the mast having at least two telescoping load bearing arms pivotally mounted to the vehicle, each of the arms being comprised of a plurality of co-axially aligned segments;

coupling the oilfield apparatus to the mast when the mast is in a retracted position;

lifting the oilfield apparatus by an action of synchronously extending the at least two telescoping load bearing arms from the retracted position; and

pivoting the at least two telescoping load bearing arms to position the oilfield apparatus over the wellhead.

9. (Previously Presented) The method of claim 8, wherein at least one of the at least two telescoping load bearing arms includes a plurality of segments and a self-locking jack screw for extending a first one of the plurality of segments with respect to a second one of the plurality of segments.

10. (Previously Presented) The method of claim 9, wherein the at least one of the at least two telescoping load bearing arms includes a lifting chain for telescopically extending a third one of the plurality of segments out of the second one of the plurality of segments as the second of the plurality of segments is extending.

Appl. No. 10/065,523

Reply to Final Office action of September 12, 2005

11. (Previously Presented) The method of claim 8, further comprising automatically limiting a degree to which the at least two telescoping arms load bearing may be pivoted based on the amount of extension of the at least two arms.

12. (Previously Presented) The method of claim 11, wherein automatically limiting the degree to which the at least two arms may be pivoted includes moving, with respect to points around which the at least two telescoping load bearing arms are pivoting, a mounting point of a mechanism causing pivoting of the at least two arms based on the amount the two arms are extended.

13. (Original) The method of claim 8, wherein the oiled field apparatus includes a coiled tubing injector.

14. (Original) The method of claim 13, further comprising transporting a blowout preventer on the vehicle, wherein the coiled tubing injector and blowout preventer are transported between the at least two arms and the blowout preventer and coiled tubing injector are mounted to pivot with the mast between a stowed position and an upright position.

15. (Previously Presented) The method of claim 13, further comprising, after lifting the coiled tubing injector and before pivoting the at least two telescoping load bearing arms to position the coiled tubing injector over the wellhead, lowering the coiled tubing injector by retracting the at least two telescoping load bearing arms and attaching it to a blowout preventer held in an upright position between the at least two legs.

16. (Original) The method of claim 8 wherein the oilfield apparatus is placed between the at least two legs during transporting the oilfield apparatus and the mast on the vehicle, the oilfield apparatus being transported to the site on the vehicle on a mounting that pivots with the at least two legs of the mast between a stowed position and at least an upright position.

Appl. No. 10/065,523
Reply to Final Office action of September 12, 2005

17. (Previously Presented) Apparatus for hoisting oilfield apparatus over a well head, the apparatus comprising a mast assembly with at least two telescoping load bearing arms pivotably coupled to a support base, the plurality of arms each comprising a plurality of synchronously operable, coaxially aligned, telescoping segments for extending and retracting in unison, whereby oilfield apparatus mounted between the at least two arms may be lifted through an action of synchronously extending the at least two telescoping arms and positioned over a well head by pivoting the telescoping segments.

18. (Previously Presented) The apparatus of claim 17, wherein at least one of the at least two telescoping load bearing arms includes a self-locking jack screw for extending a first one of the plurality of segments of the at least one of the at least two telescoping load bearing arms with respect to a second one of the plurality of segments of the at least one of the at least two telescoping load bearing arms.

19. (Previously Presented) The apparatus of claim 18, wherein the at least one of the at least two telescoping load bearing arms includes a lifting chain for telescopically extending a third one of the plurality of segments out of the second one of the plurality of segments as the second one of the plurality of segments is extending.

20. (Original) The apparatus of claim 17, wherein the mast assembly is mounted to a rear portion of a vehicle for transporting the mast assembly.

21. (Previously Presented) The apparatus of claim 17 further including a mechanism coupled between the mast assembly and the support base for pivoting the at least two telescoping load bearing arms.

22. (Previously Presented) The apparatus of claim 21, wherein the mechanism for pivoting the at least two telescoping load bearing arms has a limited range and is coupled at one end to a movable mounting.

Appl. No. 10/065,523
Reply to Final Office action of September 12, 2005

23. (Original) The apparatus of claim 22, further including a mechanism for moving the mounting automatically based on the extension of the at least two arms, whereby pivoting of the arms in at least one direction is limited by the amount of extension of the at least two arms.

24. (Original) The apparatus of claim 21, wherein the mechanism for pivoting includes a hydraulic cylinder.

25. (Previously Presented) The apparatus of claim 17 further including a mounting for transporting oilfield apparatus, the mounting being disposed between the at least two telescoping load bearing arms and moving with the mast assembly as it pivots between a stowed position and at least an upright position.

26. (Previously Presented) The apparatus of claim 17, further including a cross member coupled between ends of the at least two telescoping load bearing arms, the cross member including a latch to which oilfield apparatus may be attached for lifting by the mast assembly.

27. (Currently Amended) The apparatus of claim 26, further comprising a coiled tubing mounting and a blowout preventer mounting disposed between the at least two telescoping load bearing arms, wherein the cross member including a trolley for moving laterally the latch.

28. (Previously Presented) The apparatus of claim 27, wherein the blowout prevent mounting slides laterally between the at least two telescoping load bearing arms.

29. (Previously Presented) Apparatus for hoisting oilfield apparatus over a well head comprising a mast assembly with at least two telescoping load bearing arms coupled pivotably coupled to a base, the plurality of arms each comprising a plurality of synchronously operable, coaxially aligned, load bearing telescoping segments for extending and retracting in

Appl. No. 10/065,523
Reply to Final Office action of September 12, 2005

unison, the apparatus further including a mechanism coupled between the mast assembly and the mounting for pivoting the at least two telescoping arms, the mechanism for pivoting being limited in extension and coupled at one end to a moveable mounting, the movable mounting responsive to extension of the at least two telescoping arms.

30. (Canceled)

31. (Canceled)

32. (Previously Presented) The apparatus of claim 29, further including a cross member coupled between ends of the at least two telescoping load bearing arms, the cross member including a latching mechanism to which oilfield apparatus may be attached for lifting by the mast assembly.

33. (Previously Presented) The apparatus of claim 29, further including a mounting for transporting oilfield apparatus, the mounting being disposed between the at least two telescoping load bearing arms and moving with the mast assembly as it pivots between a stowed position and at least an upright position, wherein the mounting includes a coiled tubing injector support and a blow out preventer support.

34. (Previously Presented) The apparatus of claim 33, further including a cross member coupled between ends of the at least two telescoping load bearing arms, the cross member including a latch to which oilfield apparatus may be attached for lifting by the mast assembly and a trolley for moving laterally the latch.

35. (Previously Presented) The apparatus of claim 33, wherein the blowout preventer support slides laterally between the at least two telescoping load bearing arms.

36. - 38. (Cancelled)

Appl. No. 10/065,523

Reply to Final Office action of September 12, 2005

39. (Currently Amended) The ~~hoisting~~ apparatus of claim ~~[[36]]~~ 17, wherein the plurality of ~~synchronously operable, coaxially aligned, telescoping nesting~~ segments comprise roller bearings to reduce friction when raising and lowering the oilfield apparatus.

40. (Currently Amended) ~~An apparatus for hoisting and positioning at least one oilfield apparatus over a well head~~ The apparatus of claim 17, comprising:

~~a base member;~~

~~a mast pivotally connected to the base member, the mast having at least two telescoping arms comprising a plurality of co-axially aligned segments for raising and lowering at least one oilfield apparatus;~~

~~a transport mechanism couplable to the mast and moveable between the at least two telescoping arms, wherein the transport mechanism is operable to support an oilfield apparatus; and~~

~~a mounting coupled to the support base member for supporting an the oilfield apparatus, wherein the mounting is moveable along the base member for alignment with the transport mechanism.~~

41. (Previously Presented) The apparatus of claim 40, wherein the mounting comprises a sliding structure having a pair of sleeves connected by a cross support member.

42. (Previously Presented) The apparatus of claim 41, wherein a hydraulic cylinder moves the sliding structure.

43. (Currently Amended) The apparatus of claim 40, wherein the support ~~base member~~ is mounted to a vehicle.

44. (Currently Amended) The apparatus of claim 40, wherein the plurality of ~~synchronously operable, coaxially aligned, telescoping nesting~~ segments comprise roller bearings to reduce friction therebetween when raising and lowering the oilfield apparatus.

Appl. No. 10/065,523

Reply to Final Office action of September 12, 2005

39. (Currently Amended) The ~~hoisting~~ apparatus of claim ~~[[36]]~~ 17, wherein the plurality of synchronously operable, coaxially aligned, telescoping nesting segments comprise roller bearings to reduce friction when raising and lowering the oilfield apparatus.

40. (Currently Amended) ~~An apparatus for hoisting and positioning at least one oilfield apparatus over a well head~~ The apparatus of claim 17, comprising:

~~a base member;~~

~~a mast pivotally connected to the base member, the mast having at least two telescoping arms comprising a plurality of co-axially aligned segments for raising and lowering at least one oilfield apparatus;~~

~~a transport mechanism couplable to the mast and moveable between the at least two telescoping arms, wherein the transport mechanism is operable to support an oilfield apparatus;~~
~~and~~

~~a mounting coupled to the support base member for supporting an the oilfield apparatus, wherein the mounting is moveable along the base member for alignment with the transport mechanism.~~

41. (Previously Presented) The apparatus of claim 40, wherein the mounting comprises a sliding structure having a pair of sleeves connected by a cross support member.

42. (Previously Presented) The apparatus of claim 41, wherein a hydraulic cylinder moves the sliding structure.

43. (Currently Amended) The apparatus of claim 40, wherein the support base member is mounted to a vehicle.

44. (Currently Amended) The apparatus of claim 40, wherein the plurality of synchronously operable, coaxially aligned, telescoping nesting segments comprise roller bearings to reduce friction therebetween when raising and lowering the oilfield apparatus.

Appl. No. 10/065,523

Reply to Final Office action of September 12, 2005

45. (New) The apparatus of claim 17, further comprising:
a transport mechanism disposed on and movable along a cross-support member between
the at least two telescoping arms, the transport member operable to support the oilfield apparatus
to enable lateral positioning of the oilfield apparatus between the at least two telescoping arms.

Appl. No. 10/065,523

Reply to Final Office action of September 12, 2005

45. (New) The apparatus of claim 17, further comprising:

a transport mechanism disposed on and movable along a cross-support member between the at least two telescoping arms, the transport member operable to support the oilfield apparatus to enable lateral positioning of the oilfield apparatus between the at least two telescoping arms.